

SWBAT: measure the speed of sound using the wave equation

Jan 4-7:20 AM

Concept Sheet

~ 7 rows when we're done...

We'll fill in two terms (rows) today.

Concept	Meaning	Sym-bol	Units	Picture
<div>PITCH →</div> FREQUENCY	HOW MANY PER UNIT OF TIME $\text{FREQ} = \frac{\#}{\text{TIME}}$	f $f = \frac{1}{T}$	hertz $\text{Hz} = \frac{1}{\text{sec}}$	
PERIOD	HOW MUCH TIME FOR ONE. PERIOD = $\frac{\text{TIME}}{\#}$	T $T = \frac{1}{f}$	seconds sec.	
TRANSVERSE	WHEN THE MEDIUM VIBRATES ACROSS THE DIRECTION THE WAVE TRAVELS.			
LONGITUDINAL	WHEN THE MEDIUM VIBRATES ALONG THE DIRECTION THE WAVE TRAVELS.			
<div>INTENSITY →</div> AMPLITUDE	HOW FAR FROM THE MIDDLE.	A	meters m	
WAVELENGTH	HOW FAR FOR ONE "BACK & FORTH"	λ	meters m	
WAVESPEED	DISTANCE OF A WAVE TIME OF A WAVE $v = \frac{\lambda}{T}$	v $v = \lambda \cdot f$	$\frac{\text{meters}}{\text{second}}$ m/s	

Feb 18-6:50 AM

Welcome!!!

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SECA Physics
Monday 12 May 2014

* Pick up:

- blue concept sheet
- slip of paper (for later)



Opening Question:

What are different speeds you can think of?

RULER
SOUND
CLOCK HANDS

TRAINS,
PLANES,
CARS, ...

Centering

Sep 7-7:04 AM

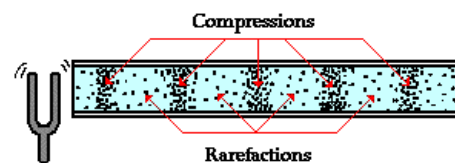
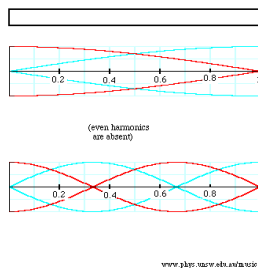
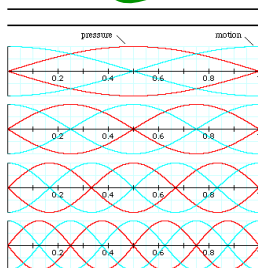
Speed is change in distance over change in time

For a wave that's a wavelength / a period

$$V = \frac{\lambda}{T} = \lambda \cdot \frac{1}{T}$$

And frequency = 1/period so ...

$$f = \frac{1}{T} \quad v = \lambda \cdot f$$



<http://www.acs.psu.edu/drussell/Demos/StandingWaves/StandingWaves.html>

Feb 27-7:58 AM

f	λ	s
512	64.5 cm	33,024 m/s
256	138.5 cm	35,456 m/s
426.6	80.5 cm	34,341.3 m/s

DOESN'T DEPEND ON FREQ

$$\frac{35,456 \text{ m/s}}{100} = \frac{354.56 \text{ m/s}}{1609 \text{ m/mi}} = 0.22 \text{ mi/s} \times 3600 \text{ s/hr}$$

$$\approx 792 \text{ mi/hr}$$

$$\approx 760 \text{ mi/hr}$$

May 12-1:21 PM

Daily 3 Questions

CP: Sound worksheet due Friday 5/16

- * Every day except test/project days
- * 3 Questions on the topics of the day
- * Main source of daily points
- * I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

Your can't get your points if you don't have your **NAME!!!**

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

1. About how many cm/s is the speed of sound in air?

$\sim 33,000 \text{ cm/s}$

2. To calculate the ^sspeed we needed to multiply the
wavelength by the frequency.

3. When we used different frequencies, were the
speeds of sound close to each other (in the same
ball park)?

Yes!

Apr 25-7:25 AM